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A.D. 1860, 20th JULY. N<sup>o</sup> 1764.

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S P E C I F I C A T I O N

OF

HARLES CONSTANT JOSEPH GUFFROY.

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PREPARING THE LIVERS OF SALT  
WATER FISH.

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L O N D O N :

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A.D. 1860, 20th JULY. N° 1764.

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Preparing the Livers of Salt Water Fish.

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**LETTERS PATENT** to Charles Constant Joseph Guffroy, of Lille, Town in the French Empire, Merchant, for the Invention of "**IMPROVEMENTS IN PREPARING THE LIVERS OF SALT WATER FISH.**"—A communication from Augustin Joseph Despinoy, resident at Lille, in the French Empire.

Sealed the 7th December 1860, and dated the 20th July 1860.

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**PROVISIONAL SPECIFICATION** left by the said Charles Constant Joseph Guffroy at the Office of the Commissioners of Patents, with his Petition, on the 20th July 1860.

I, CHARLES CONSTANT JOSEPH GUFFROY, of Lille, Town in the French  
5 Empire, Merchant, do hereby declare the nature of the said Invention for  
"**IMPROVEMENTS IN PREPARING THE LIVERS OF SALT WATER FISH,**" (communicated  
to me by Augustin Joseph Despinoy, resident at Lille, in the French Empire,) to be as follows:—

The object of this Invention is to obtain a concentrated extract from the  
10 liver of salt water fish. The liver of fish, such as cod, from which oil is or may  
be extracted possessing chemical and medicinal properties, contains in addition  
to the oil a solid substance, the parenchyma, and a watery liquid. The latter  
have hitherto been thrown aside or simply used as manure. Now I have  
discovered that they retain a considerable portion of the chemical elements  
15 which give the value to the oil. I extract and obtain from them a new  
substance in a state of paste or nearly solid, containing in a high degree all the  
active and medicinal properties of the oil. I proceed as follows:—I carefully  
separate the liquid from the solid residuum by decantation or otherwise.



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*Guffroy's Improvements in Preparing the Livers of Salt Water Fish.*

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I next evaporate the liquid either over a slow fire in a bain marie, or water bath, by a coil of pipes containing steam or water in open pans or under a vacuum, or otherwise, until the liquid, thickening in proportion to the evaporation, has acquired or assumed a state of stiff paste. From 100 lbs. of liquid I obtain about 10 or 12 lbs. of paste. During the evaporation the 5 albumen contained in the liquid coagulates and floats on the surface. It is better it should be skimmed off, though not absolutely necessary. The paste can be formed into pills, and in this state will not be so disagreeable to take as cod liver oil. Even exposed to the air this form of preparation will preserve its medicinal properties almost indefinitely. 10

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**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said Charles Constant Joseph Guffroy, in the Great Seal Patent Office on the 18th January 1861.

**TO ALL TO WHOM THESE PRESENTS SHALL COME, I, CHARLES CONSTANT JOSEPH GUFFROY, of Lille, Town in the French Empire, Merchant, 15** send greeting.

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twentieth day of July, in the year of our Lord One thousand eight hundred and sixty, in the twenty-fourth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said 20 Charles Constant Joseph Guffroy, Her special licence that I, the said Charles Constant Joseph Guffroy, my executors, administrators, and assigns, or such others as I, the said Charles Constant Joseph Guffroy, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should 25 and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN PREPARING THE LIVERS OF SALT WATER FISH,**" (a communication from Augustin Joseph Despinoy, resident at Lille, in the French Empire,) upon the condition (amongst others) that I, the said Charles 30 Constant Joseph Guffroy, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately 35 after the date of the said Letters Patent.



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*Guffroy's Improvements in Preparing the Livers of Salt Water Fish.*

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NOW KNOW YE, that I, the said Charles , do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say:—

5 The object of this Invention is to obtain a concentrated extract from the livers of salt water fish. The liver of the cod fish, squalus, thornback, ray, or any other fish which is or may be used for the purpose of extracting therefrom oils on account of their medicinal and chemical properties, contains not only oil, but also a solid substance which forms its parenchyma, and a liquid or watery  
10 substance, which is found intimately mixed or combined with both the fatty matter and the solid matter or parenchyma. In all processes heretofore practised for the extraction of the oil from the liver these two substances accompanying the oil have been left as a residue and thrown away or used as a manure. This Invention is based upon the discovery that this residue contains  
15 a much more considerable proportion of those chemical elements which impart to the oil its precious qualities than the oil itself; and I have succeeded in extracting and obtaining from the residue a new substance in a state of paste, or in a nearly solid state, which contains to a much greater extent all the medicinal properties and other useful qualities of the oil. I prepare the  
20 extract in the following manner:—I first carefully separate the liquid substance from the solid residue. This I effect either by decantation, filtration, or otherwise. I then take the liquid mass and evaporate it until it acquires the consistency of tough paste. This may be done directly over a slow fire by means of a hot water bath, or by causing steam or hot water to  
25 circulate through a worm or coil placed inside the boiler or vessel containing the liquid. The evaporation may be carried on in the open air or in vacuo. In this way I obtain from ten to fifteen pounds of the paste from every hundred pounds of the liquid. During the operation the albumen contained in the liquid coagulates and floats on the surface in snow-like scum; this can be  
30 removed or left at will in the paste. If the albumen is removed the paste is obtained of a brown color, and is more hygrometrical; if, on the contrary, the albumen is left, it is firmer, clearer, of a yellowish fawn color, and less hygrometrical.

The paste obtained in manner before described has the smell and taste of  
35 cod liver oil, but it contains a much greater proportion of those chemical elements which impart to the oil its well known medicinal properties. It is of an acid character, and is perfectly soluble in water and alcohol. The consistency of the paste allows of its being made into pills, pastiles, and other solid forms, which may be taken by the sick and others with the greatest



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*Guffroy's Improvements in Preparing the Livers of Salt Water Fish.*

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facility. It may be preserved almost indefinitely without injuring its qualities, even when exposed to the open air. Owing to its hygrometric property it is advisable to coat the paste in the form of pills or otherwise with a resinous coating; and this can be done by dipping in a solution of balm, such as Peruvian balsam or balsam of tola, and withdrawing the substance immediately, and allowing it to dry. 5

Whatever process may be employed for the extraction of the oil, the waters proceeding from it can in all cases be used to extract my new material. However I will describe a process which produces the best extract at the same time that it produces the best quality of oil. I take livers which have not been submitted to fermentation, and also as fresh as possible, and put them into a boiler, and allow them to heat under a slow fire or in a bain marie, or by steam, and continually stir them during the process. When the parenchyma or cellular tissue of the livers is destroyed, and the mass forms a boiling pulp, well mixed and to all appearance homogeneous, I throw the whole on a sieve or into a cullender, which retains the solid residue, and allows the liquid, which is composed of oil and water, to pass through. The oil and water become separated on being allowed to settle in the receiver, on account of the difference in their specific gravity. After resting a sufficient time I decant. By this means an oil pure and white is obtained, as well as waters purified of all material in suspension, and containing nothing but the elements in solution composing the extract. These waters are afterwards treated by evaporation, as before stated. The solid part remaining on the sieve has the oil and water extracted from it either by pressure or by boiling it again with a small quantity of water.

And having now described the nature of the said Invention, and in what manner the same is to be performed, I declare that I claim the preparation of the livers of salt water fish in order to obtain therefrom a new substance, being a concentrated medicinal extract, substantially as herein-before described.

In witness whereof, I, the said Charles Constant Joseph Guffroy, have hereunto set my hand and seal, this Ninth day of January, One thousand eight hundred and sixty-one.

CH. C. J. GUFFROY. (L.S.)

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